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For Appl. No. 10/808,360

N^o 1869

A.D. 1913

(Under International Convention)

Date claimed for Patent under Patents and Designs Act, 1907, being date of first Foreign Application (in Germany), } 29th Jan., 1912

Date of Application (in the United Kingdom), 23rd Jan., 1913
(Patent of Addition to No. 6917 of 1910, dated 22nd Mar., 1909)

At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

Complete Specification Accepted, 20th Mar., 1913

COMPLETE SPECIFICATION.

Improvements in Optical Squares

We, CARL ZEISS, a body corporate, incorporated under the laws of the Grand-Duchy of Saxe-Weimar, Germany, residing at Carl-Zeiss-Strasse, Jena, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

According to the principal patent, in optical squares consisting of two silvered glass plates fixed onto an intermediate member those alterations in form, which are caused by considerable differences in the mean temperature of the intermediate member on the one hand and of the plates on the other hand, may be reduced, by a material being chosen for the intermediate member, which material has about the same thermal conductivity as the glass plates. Among the materials, it is stated in the specification of the principal patent, with the low thermal conductivity of glass and having sufficient strength, glass itself should be taken notice of; at the same time the constructional form so characterized is protected in the second claim.

The present additional invention originated in the idea, that the compensation alluded to above of the mean temperatures of the intermediate member on the one hand and of the plates on the other hand could be considerably accelerated and thereby a further limiting of the said alterations in form effected, if for the reflecting plates a material were available, possessing, as compared with glass, a high thermal conductivity and being at the same time adapted, as regards its strength, for use as the intermediate member. According to the present invention instead of glass quartz is employed as the material, which satisfies these requirements, for the reflecting plates and the intermediate member of an optical square of the above-mentioned constructional form. This material considerably surpasses glass as regards its thermal conductivity and also possesses greater strength. Unfused quartz possesses a particularly high thermal conductivity, while that of fused quartz is still about five times as great as that of the kinds of optical glass in general use.

[Price 8d.]



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According to the shape and size of the optical squares they may consist, just as those according to the principal patent, of one piece or be built up of several parts.

It is necessary, when using unfused quartz, to take into consideration, that, as is well-known, the coefficient of expansion of a crystal is different in the direction of its axis and in the direction perpendicular to the said axis. Hence in the case of an optical square consisting of several pieces, these will be appropriately cut out in such a manner, that, when put together to form the optical square, they will correspond to each other as regards the direction of their crystal-axis, in order to avoid strains consequent upon alterations in temperature. It is to be particularly recommended, to let each separate piece stand with its crystal-axis directed perpendicularly to the principal plane of reflexion, as then the respective angle of inclination of the reflecting plates remains almost entirely uninfluenced by alterations in temperature.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

Optical square according to Claim 2 of Patent No. 6917/1910 consisting of two silvered glass plates, which are fixed onto an intermediate member also consisting of glass, the novel feature being, that in the reflecting plates and in the intermediate member the glass is replaced by quartz.

Dated the 15th day of January, 1913.

For CARL ZEISS,

RUDOLF STRAUSS,

A Member of the Board of Management. 25

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